IB-MECA ACUTE TREATMENT RELIEVES PAIN IN CFA CHRONIC INFLAMMATORY MODEL IN RATS

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Introduction: IB-MECA is an agonist of adenosine A3 receptor(A3AR), which has been investigated to relieve pain and inflammation; however, its mechanisms are not completely elucidated. The aim of this study is to evaluate the antinociceptive and anti-inflammatory effects of an A3AR agonist in animal model of chronic inflammatory pain, measuring the nociceptive and neurochemical responses.

Methods: 64 adult Wistar male rats were divided into two groups: control(no manipulation) and pain(single intradermal injection in the left footpad of 100µl of CFA in saline solution 1mg/ml). After the establishment of chronic inflammation, the animals were subdivided into eight groups according the treatment:control; control+vehicle(DMSO 3%); control+morphine(5mg/kg in saline solution); control+IB-MECA treatment(0.5µmol/kg i.p in DMSO 3%), pain+vehicle, pain+morphine and pain+IB-MECA treatment. Nociceptive tests(von Frey, hot plate and Randall-Selitto) were assessed at baseline, 10 and 14 days after CFA injection, and 30 min, after IB-MECA administration. IL-1β, IL-10, BDNF and NGF were measured in brainstem and spinal cord (CEUA-HCPA 150530).

Results: We observed the establishment of ain model indexed by decrease of latency withdrawal in all behavioral tests 10 and 14 days after CFA injection. IB-MECA totally and partially reversed the decrease of pain threshold in the Von Frey and Randal Selitto tests, respectively. We observed decreased brainstem and spinal IL-10 levels in pain group when compared to other groups. The pain groups showed increased IL-10 levels in both structures. Also, we showed that IB-MECA administration in control group increased interleukin levels compared to control or sham groups.

Conclusion: IB-MECA was effective to increase of mechanical threshold in chronic inflammation model corroborating previous studies. However, adenosine A3 receptor seems to have complexes effects in the central nervous system, with pro-inflammatory and anti-inflammatory roles, especially in healthy conditions, in agreement with our study that showed that IB-MECA increases the IL-1β and IL-10 in the control group.

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